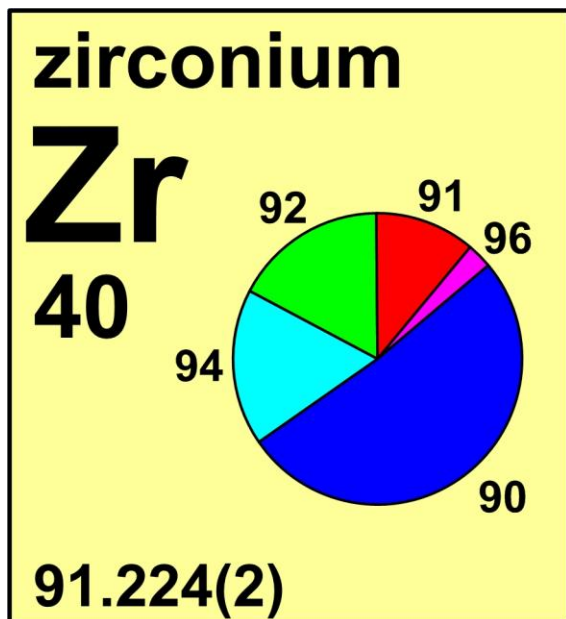


zirconium

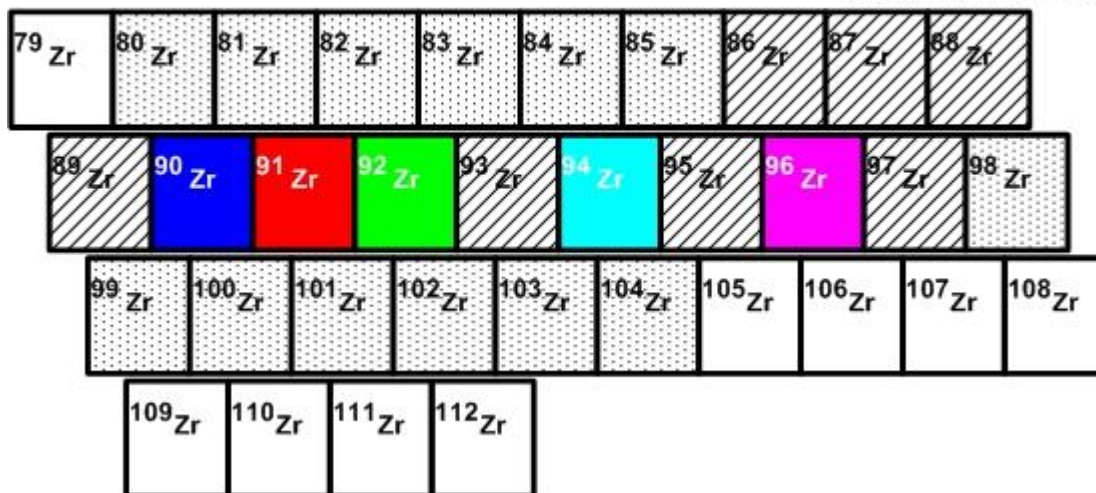


| Stable isotope | Atomic mass* | Mole fraction |
|------------------|--------------|---------------|
| ⁹⁰ Zr | 89.904 7044 | 0.5145 |
| ⁹¹ Zr | 90.905 6458 | 0.1122 |
| ⁹² Zr | 91.905 0408 | 0.1715 |
| ⁹⁴ Zr | 93.906 3152 | 0.1738 |
| ⁹⁶ Zr | 95.908 2734 | 0.0280 |

* Atomic mass given in unified atomic mass units, u.

Half-life of radioactive isotope

Less than 1 second
Between 1 second and 1 hour
Greater than 1 hour



Important applications of stable and/or radioactive isotopes

Isotopes in nuclear science

- 1) ⁹⁰Zr; zirconium enriched in ⁹⁰Zr has been proposed for the cladding of reactor fuel elements because it would have a lower neutron absorption cross section than normal zirconium cladding.

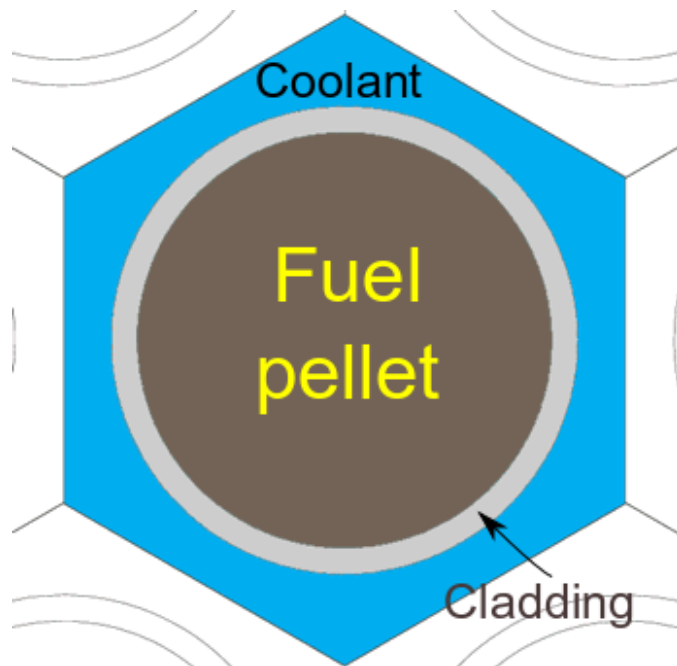


Figure 1: The cores of nuclear reactors have fuel pins that are typically made of uranium-oxide (UO_2). Then to keep fission products from escaping into the coolant these pins are surrounded by a zirconium clad.